MARTINDALE POND

Wayne County

2004 Fish Management Report

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EXECUTIVE SUMMARY

- Martindale Pond is a 15-acre borrow pit that was created during the construction of Interstate 70. The pond is located just east of Jacksonburg, Indiana in Wayne County. The pond boasts a public boat ramp and a shoreline fishing area.

- A fisheries survey was conducted in June 2004 to evaluate the predator/prey balance, determine age and growth of the dominant sport fish, evaluate recruitment of both largemouth bass and bluegill, and determine the effectiveness of grass carp at controlling submergent vegetation.

- A total of 450 fish representing nine species and hybrid sunfish was collected with an estimated weight of 140 lbs. The three most abundant species collected by number were bluegill (66%), largemouth bass (11%), and channel catfish (10%). The three most abundant species collected by weight were bluegill (38%), largemouth bass (23%), and channel catfish (19%).

- Bluegill ranged in length from 2.8 to 7.7 in and averaged 6.2 in. Eighty-two percent of the bluegill collected were harvestable size (6 in or larger). Age-1 and age-2 bluegill were not well represented indicating that recruitment may be suffering.

- Largemouth bass ranged in length from 4.4 to 18.7 in, averaged 9.1 in, and 22% met or exceeded the 14-in minimum length limit. Growth of largemouth bass was average up to age 3 and slightly above average at ages 4 and 5.

- Forty-four channel catfish were collected that weighed an estimated 27 lbs. Channel catfish ranged in size from 8.6 to 16.5 in and averaged 12.2 in. Fifty-nine percent of the fish were of harvestable size (12 in or greater). The Division of Fish and Wildlife should continue to stock 1,500 channel catfish annually. Stocked fish should average at least 10 in to reduce mortality due to largemouth bass predation.

- Grass carp have been extremely effective at controlling Eurasian watermilfoil. The reduction in submergent vegetation has facilitated planktonic algae blooms. Periodic vegetation monitoring may be necessary to ensure access does not become limited.

- The reduction of submergent aquatic vegetation, namely Eurasian watermilfoil, has had a favorable impact on the fishery at Martindale Pond by allowing increased predation on bluegill by largemouth bass, increased growth of bluegill and largemouth bass, and improved recruitment of largemouth bass.

INTRODUCTION

Martindale Pond is a 15-acre borrow pit that was created during the construction of Interstate 70. The pond is located just east of Jacksonburg, Indiana in Wayne County. The Indiana Department of Natural Resources, Division of Fish and Wildlife purchased the pond for use as a public fishing area. The pond boasts a public boat ramp and a shoreline fishing area.

The last two fisheries surveys (1996 and 2000) revealed an overabundant, slow-growing bluegill population (Wisener 2001). This was in part due to a diminished largemouth bass population. Based on a recommendation following the 2000 fisheries survey, 228 adult largemouth bass that averaged 12 in in length were stocked in the spring of 2001. The bass were stocked in order to increase predation on bluegill, which in turn should improve bluegill growth and largemouth bass recruitment.

Excessive submergent aquatic vegetation has also contributed to the overabundance and slow growth of bluegill. In 1997 and 2001, 118 and 120 grass carp, respectively, were stocked to provide control of submergent aquatic vegetation, namely Eurasian watermilfoil. After the introduction of grass carp, only periodic herbicide treatments of milfoil were necessary. Since 2001, no herbicide treatments have been required.

The goals of the 2004 fisheries survey at Martindale Pond were to evaluate the predator/prey balance, determine age and growth of the dominant sport fish, evaluate recruitment of both largemouth bass and bluegill, and determine the effectiveness of grass carp at controlling submergent vegetation.

METHODS

The fisheries survey was conducted on June 15 and 16, 2004. Physical and chemical characteristics were collected for water quality and measured in the deepest area of the lake according to the Manual of Fisheries Survey Methods (Shipman 2001). Submersed aquatic vegetation was sampled on July 19, 2004 using guidelines written by Pearson (2004).

Fish were collected using three sampling gears. One lap of pulsed DC night, shoreline electrofishing was conducted for 0.58 h. One trap net and two experimental-mesh gill nets were also fished overnight. All fish collected were measured to the nearest 0.1 in TL. Average weights for Fish Management District 5, or length-weight regressions were used to estimate the weight of all fish collected. Scales were taken from largemouth bass, bluegill, black crappie, and

redear sunfish for age and growth analysis. Proportional stock density (PSD) was calculated for largemouth bass and bluegill (Anderson and Neumann 1996). The Bluegill Fishing Potential Index (BGFP), developed by Ball and Tousignant, 1996, was utilized to describe the bluegill fishing opportunities.

RESULTS

The water temperature at Martindale Pond on June 15, 2004 was 84.2ºF at the surface and 71.6ºF at 10 ft. Dissolved oxygen was 16.0 parts per million (ppm) at the surface and 0.6 ppm at 10 ft. Conductivity was 310 µS and the Secchi disk reading was 2.5 ft.

Forty sites were sampled for aquatic vegetation on July 19, 2004. No aquatic vegetation was collected or observed. This was a dramatic change since the last survey in 2000 whereby 65% of the pond was covered by Eurasian watermilfoil. At the time of both the fisheries and vegetation surveys in 2004, a planktonic algae bloom was present.

Altogether, 450 fish representing nine species and hybrid sunfish were collected with an estimated weight of 141 lbs. The three most abundant species collected by number were bluegill (66%), largemouth bass (11%), and channel catfish (10%). The three most abundant species collected by weight were bluegill (38%), largemouth bass (23%), and channel catfish (19%).

A total of 298 bluegill was collected that weighed 53 lbs. The relative abundance of bluegill (66%) increased 12% since 2000. The catch rate (CPUE) of bluegill was 4.0/gillnet lift and 222.0/trapnet lift. Electrofishing yielded a CPUE of 116.6 bluegill/h. Bluegill ranged in length from 2.8 to 7.7 in and averaged 6.2 in. Bluegill PSD was 43 and much improved from 2000 when PSD was only 3. Additionally, 82% of the bluegill collected were harvestable size (6 in or larger) compared to only 7% in 2000. Age-1 and age-2 bluegill comprised just 3% of the sample. The BGFP score was 13, which quantifies the bluegill fishery as fair. Bluegill growth has improved substantially at Martindale Pond since 2000. Bluegill averaged a 1.3-in increase in total length at ages 3, 4, and 5. Compared to other lakes in central Indiana, bluegill growth was average.

A total of 50 largemouth bass that weighed 33 lbs was collected. Largemouth bass was second in abundance by both number (11%) and weight (23%). Electrofishing yielded a CPUE of 82.3 bass/h. Largemouth bass ranged in length from 4.4 to 18.7 in, averaged 9.1 in, and 22% met or exceeded the 14-in minimum length limit. In 2000, the average length of largemouth bass

was 13.2 in and 54% measured at least 14 in. Age-1 and age-2 largemouth bass were well represented and comprised 66% of the largemouth bass collected compared to only 29% in 2000. Largemouth bass PSD was 52 compared to 83 in 2000. Growth of largemouth bass was average up to age 3 and slightly above average at ages 4 and 5, which was much improved since the 2000 fisheries survey.

Overall, 44 channel catfish were collected with an estimated weight of 27 lbs. Channel catfish ranked third in abundance by both number (10%) and weight (19%). Channel catfish ranged in size from 8.6 to 16.5 in and averaged 12.2 in. Fifty-nine percent of the fish were of harvestable size (12 in or greater).

Sixteen black crappie that weighed slightly over 4 lbs were collected. Black crappie ranged in length from 6.9 to 10.7 in and averaged 8.0 in. The growth rate of black crappie at ages 1 and 2 was slightly below average.

Redear sunfish accounted for 3% of the sample by number and weight. This was a notable decline since 2000 when the relative abundance of redear by number was 21%. Redear ranged in length from 5.7 to 8.7 in and averaged 7.6 in. Of the 12 redear sunfish collected, 11 were considered harvestable (6 in or larger). As in 2000, no age-1 or age-2 redear were collected.

Other species that were collected include hybrid sunfish, white sucker, white crappie, golden shiner, and yellow perch. Together, these species comprised 7% of the sample by number and 14% by weight.

DISCUSSION

The elimination of submergent vegetation by grass carp and the stocking of 228 adult largemouth bass have had a favorable impact on the fishery at Martindale Pond. With no vegetation available for cover, largemouth bass were able to forage more effectively on bluegill. As a result, overly abundant panfish populations no longer dominate the fishery and largemouth bass growth improved. Largemouth bass averaged almost a 1.0 inch increase in length at ages 2 through 4.

The reduction of small bluegill in Martindale Pond decreased competition amongst bluegill, which improved bluegill growth. Bluegill averaged a 1.3-in increase in TL at ages 3

through 5. Additionally, with fewer bluegill to inhibit their success, largemouth bass recruitment improved as 66% of the bass collected were age 1 or 2.

The goal of the 2001 grass carp stocking was to eliminate submergent aquatic vegetation and since 2002, no submergent vegetation has been observed. However, this level of control is not desirable over the long term. Without vegetation to provide refuge for smaller bluegill, they become easy prey for largemouth bass. As a result, bluegill recruitment suffers. This was evident by the fact that less than 3% of the bluegill collected were age 1 or 2. Because grass carp generally become less effective at controlling submergent vegetation after five years, some vegetation is likely to return in the near future. Therefore, when that happens, bluegill recruitment should improve.

Submergent vegetation should continue to be monitored at Martindale Pond. As grass carp provide less vegetation control and submergent growth returns, it will be important to keep the level of vegetative cover below 20%. While some vegetation is necessary to promote bluegill recruitment, too much can lead to an over abundance of bluegill. Vegetation monitoring is also needed to assure that good access is provided at the boat ramp and popular shore fishing areas.

Channel catfish were last stocked at Martindale Pond in 2003. Stocked fish ranged in length from 8.0 to 12.9 in and averaged 10.3 in. In the present survey, channel catfish measured 8.6 to 16.5 in and averaged 12.2 in. Since a narrow size range of catfish was collected, and their average size was not much larger than the average size stocked, it is reasonable to believe that most of the channel catfish collected were from the 2003 stocking. The absence of other year classes indicates that anglers are likely utilizing the catfish fishery. Therefore, annual stockings of 1,500 channel catfish (10.0 in) should continue.

Anglers fishing at Martindale Pond will find the number of harvestable-sized bluegill has improved and fishing is less cumbersome now that there is less vegetation. There are also a few quality redear sunfish and black crappie to be targeted, and channel catfish should continue to contribute to the fishery. Additionally, largemouth bass up to 18.5 in and 3.5 lbs were collected. Anglers are encouraged to release largemouth bass over 14 in to help retain a high predator base and sustain recruitment.

RECOMMENDATIONS

- The Division of Fish and Wildlife should continue to stock 1,500 channel catfish annually. Stocked fish should average at least 10.0 in to reduce mortality due to largemouth bass predation.

- Continue to monitor submergent aquatic vegetation as needed.

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